

## PATENT COOPERATION TREATY

PCT

## NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Commissioner  
 US Department of Commerce  
 United States Patent and Trademark  
 Office, PCT  
 2011 South Clark Place Room  
 CP2/5C24  
 Arlington, VA 22202  
 ETATS-UNIS D'AMERIQUE  
 in its capacity as elected Office

Date of mailing (day/month/year) 01 June 2001 (01.06.01)	
International application No. PCT/US00/24308	Applicant's or agent's file reference 4239-55360
International filing date (day/month/year) 31 August 2000 (31.08.00)	Priority date (day/month/year) 09 September 1999 (09.09.99)
Applicant WAYNANT, Ronald, W.	

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:  
 14 March 2001 (14.03.01)

☐ in a notice effecting later election filed with the International Bureau on:

2. The election ☒ was  
☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35	Authorized officer J. Leitao Telephone No.: (41-22) 338.83.38
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From the:  
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:

NOONAN, William, D  
KLARQUIST, SPARKMAN, CAMPBELL,  
LEIGH & WHINSTON, LLP  
One World Trade Center, Suite 1600  
121 S.W. Salmon Street  
Portland, Oregon 97204  
ETATS-UNIS D'AMERIQUE

PCT

WRITTEN OPINION

(PCT Rule 66)

Applicant's or agent's file reference  
4239-55360

Date of mailing  
(day/month/year) 10.08.2001

REPLY DUE within 2 month(s)  
from the above date of mailing

International application No.  
PCT/US00/24308

International filing date (day/month/year)  
31/08/2000

Priority date (day/month/year)  
09/09/1999

International Patent Classification (IPC) or both national classification and IPC  
H05G2/00

Applicant

THE GOVERNMENT OF THE UNITED STATES OF AMERICA,...

DOCKETED FOR: 10/10/01  
COMPUTER ☒

CARD ☒  
DRAWER ☒  
BKPR ☒  
ANN. SVE ☒

1. This written opinion is the first drawn up by this International Preliminary Examining Authority.
2. This opinion contains indications relating to the following items:
- I ☒ Basis of the opinion
  - II ☐ Priority
  - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
  - IV ☐ Lack of unity of invention
  - V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
  - VI ☐ Certain document cited
  - VII ☒ Certain defects in the international application
  - VIII ☒ Certain observations on the international application

3. The applicant is hereby invited to reply to this opinion.

**When?** See the time limit indicated above. The applicant may, before the expiration of that time limit, request this Authority to grant an extension, see Rule 66.2(d).

**How?** By submitting a written reply, accompanied, where appropriate, by amendments, according to Rule 66.3. For the form and the language of the amendments, see Rules 66.8 and 66.9.

**Also:** For an additional opportunity to submit amendments, see Rule 66.4.  
For the examiner's obligation to consider amendments and/or arguments, see Rule 66.4 bis.  
For an informal communication with the examiner, see Rule 66.6.

If no reply is filed, the international preliminary examination report will be established on the basis of this opinion.

4. The final date by which the international preliminary examination report must be established according to Rule 69.2 is: 09/01/2002.

Name and mailing address of the international preliminary examining authority:



European Patent Office  
D-80298 Munich  
Tel. +49 89 2399 - 0 Tx: 523656 epmu d  
Fax: +49 89 2399 - 4465

Authorized officer / Examiner

Bésuelle, E

Formalities officer (incl. extension of time limits)

Baumann, H  
Telephone No. +49 89 2399 2131



## WRITTEN OPINION

International application No. PCT/US00/24308

### I. Basis of the opinion:

1. With regard to the **elements** of the international application (Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this opinion as "originally filed"):

#### Description, pages:

1-15 as originally filed

#### Claims, No.:

1-26 as received on 29/11/2000 with letter of 13/10/2000

#### Drawings, sheets:

1/4-4/4 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:

## WRITTEN OPINION

International application No. PCT/US00/24308

☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

*(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*

6. Additional observations, if necessary:

### V. Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement
- |                               |        |                  |
|-------------------------------|--------|------------------|
| Novelty (N)                   | Claims | 18,19,22,23,     |
| Inventive step (IS)           | Claims | 1-17,20,21,24-26 |
| Industrial applicability (IA) | Claims |                  |

2. Citations and explanations  
see separate sheet

### VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:  
see separate sheet

### VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:  
see separate sheet

1) Reference is made to the following documents:

- D1: DATABASE WPI Section EI, Week 199418 Derwent Publications Ltd., London, GB; Class W06, AN 1994-150804 &  
US-A-8 083 580 (US DEP. OF NAVY) 1<sup>st</sup> January 1994.
- D2: GORDON C. L. et al.: 'TIME-GATED IMAGING WITH AN ULTRASHORT-PULSE, LASER-PRODUCED-PLASMA X-RAY SOURCE', OPTICS LETTERS, OPTICAL SOCIETY OF AMERICA, WASHINGTON, vol. 20, no. 9, 1<sup>st</sup> May 1995, pages 1056-1058, ISSN: 0146-9592 cited in the application &  
US-A-8 083 580 (US DEP. OF NAVY) 1<sup>st</sup> January 1994.
- D3: US-A-5 275 168 (REINTJES John F. et al.) 4 January 1994 (1994-01-04).

**Re Item V**

**Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

2) Claims 18 and 1:

2.1) The subject-matter of claim 18 is not new. Indeed, document D1 discloses:

An imaging apparatus, comprising

- an electromagnetic pulse source ("laser");
- a beam splitter splitting a pulse from the electromagnetic pulse source into a first pulse portion and a second pulse portion;
- the first pulse portion directed towards an object (46) for generating an object image; and
- a microchannel plate detector ("MCP") - assumed to be a particular kind of time gate, cf. p. 7 ll. 21-22 - capturing the object image in response to the second pulse portion.

2.2) The fact of using an X-ray beam for imaging, as defined in claim 1, is obvious for the person skilled in the art of imaging. Therefore, claim 1 lacks an inventive step.

3) Claims 2-9, and 19-22:

3.1) The features defined in claims 2, 6, 7, 9, 19 and 22 are disclosed in document D1.

Therefore, the subject-matter of claims 19 and 22 are not new; the subject-matter of claims 2, 6, 7, and 9 do not involve any inventive step.

3.2) The features defined in claims 3-5 are minor well-known technical features that are not involving an inventive step. In particular, the features of claim 4 are disclosed in document D2.

3.3) The features defined in claim 8 are disclosed in document D3, e.g. cf. Fig. 1 and the related parts of the description: a Raman generator (23) generating an imaging beam (29), a beam combiner (39), a Raman amplifier (21) receiving the combined beam. These features are used for the same purpose as for the present application, i.e. for imaging an object via electromagnetic waves. Therefore, it is obvious for the person skilled in the art to use the same structural features to solve the same problem, without any inventiveness.

3.4) For the same reason, claims 20 and 21 whose features are disclosed in document D3, do not involve any inventive step.

4) The subject-matter of claim 23 is not new for the following reason.

Document D1 discloses:

a method for producing an image from an object (46), comprising

- generating an electromagnetic pulse (from the "laser");
- splitting the pulse into a first and a second portion;
- generating an imaging beam in response to the first pulse portion, the beam directed toward an object (46) for generating an object image; and
- capturing the object image on a microchannel plate detector ("MCP") in response to the second pulse portion.

5) The fact of using an X-ray beam as imaging beam, as defined in claim 10 is obvious for the person skilled in the art of imaging, e.g. cf. document D2. Therefore, claim 10 does not involve an inventive step.

6) Claims 11-17 and 24-26:

6.1) The feature defined in claim 12 is well-known, e.g. cf. document D1.

6.2) The features defined in claims 15-17 are steps of method well known from the person skilled in the art of medical imaging apparatus, not presenting any inventiveness, and not contributing to solve the posed problem.

6.3) The fact of using an X-ray source to produce an imaging beam as defined in claims 11 and 24 is obvious for the person skilled in the art of imaging, e.g. cf. document D2.

6.4) The features defined in claim 25 are obvious. Claims 13 and 26 define a minor feature that is not contributing to solved the problem.

6.5) The subject-matter of claim 14 is not clearly understandable. Indeed, if as it is understood, the X-ray pulse - having a wide wavelength spectrum with atomic transition rays - is the input of the Raman generator, it is requested to the Applicant to provide document(s) proving that such a Raman generator exists.

**Re Item VII**

**Certain defects in the international application**

7) Units:

7.1) The unit is missing p. 2, line 13. This unit is assumed to be  $W/cm^2$  during the drawing up of the present written opinion.

7.2) Some units mentioned in the application are unknown: e.g. p. 2 l. 18, p. 8 l. 3. They are assumed to be  $\mu m$  during the drawing up of the present written opinion.

7.3) Reference signs should appear in the claims in brackets.

**WRITTEN OPINION  
SEPARATE SHEET**

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International application No. PCT/US00/24308

**Re Item VIII**

**Certain observations on the international application**

8) Claim 3 falsely refers to itself. The examination has been done assuming that claim 3 refers to claim 2.

9) The wording "spirit of the ... claims" renders the scope of the claims unclear and therefore should be deleted.



From the INTERNATIONAL SEARCHING AUTHORITY

**PCT**NOTIFICATION OF TRANSMITTAL OF  
THE INTERNATIONAL SEARCH REPORT  
OR THE DECLARATION

To:

KLARQUIST, SPARKMAN, CAMPBELL,  
LEIGH & WHINSTON, LLP  
Attn. BECKER, M.L.  
One World Trade Center, Suite 1600  
121 S.W. Salmon Street  
Portland, Oregon 97204  
UNITED STATES OF AMERICA

(PCT Rule 44.1)  
DOCKETED FOR: 2-19-01  
2-19-01COMPUTER ☒CARD ☒BOOK ☒DISK ☒BKPR ☒ANN. SYF ☒

See paragraphs 1 and 4 below

Date of mailing  
(day/month/year)

19/12/2000

Applicant's or agent's file reference

4239-55360

**FOR FURTHER ACTION**

International application No.

PCT/US 00/24308

International filing date  
(day/month/year)

31/08/2000

Applicant

THE GOVERNMENT OF THE UNITED STATES OF AMERICA,...

- 1.
- ☒
- The applicant is hereby notified that the International Search Report has been established and is transmitted herewith.

**Filing of amendments and statement under Article 19:**

The applicant is entitled, if he so wishes, to amend the claims of the International Application (see Rule 46):

**When?** The time limit for filing such amendments is normally 2 months from the date of transmittal of the International Search Report; however, for more details, see the notes on the accompanying sheet.**Where?** Directly to the International Bureau of WIPO  
34, chemin des Colombettes  
1211 Geneva 20, Switzerland  
Fascimile No.: (41-22) 740.14.35**For more detailed instructions,** see the notes on the accompanying sheet.

- 2.
- ☐
- The applicant is hereby notified that no International Search Report will be established and that the declaration under Article 17(2)(a) to that effect is transmitted herewith.

- 3.
- ☐
- With regard to the protest**
- against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:

☐ the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

- 4.
- Further action(s):**
- The applicant is reminded of the following:

Shortly after **18 months** from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau as provided in Rules 90bis.1 and 90bis.3, respectively, before the completion of the technical preparations for international publication.

Within **19 months** from the priority date, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase until 30 months from the priority date (in some Offices even later).

Within **20 months** from the priority date, the applicant must perform the prescribed acts for entry into the national phase before all designated Offices which have not been elected in the demand or in a later election within 19 months from the priority date or could not be elected because they are not bound by Chapter II.

Name and mailing address of the International Searching Authority



European Patent Office, P.B. 5818 Patentaan 2  
NL-2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Carl Hakim

## NOTES TO FORM PCT/ISA/220

These Notes are intended to give the basic instructions concerning the filing of amendments under article 19. The Notes are based on the requirements of the Patent Cooperation Treaty, the Regulations and the Administrative Instructions under that Treaty. In case of discrepancy between these Notes and those requirements, the latter are applicable. For more detailed information, see also the PCT Applicant's Guide, a publication of WIPO.

In these Notes, "Article", "Rule", and "Section" refer to the provisions of the PCT, the PCT Regulations and the PCT Administrative Instructions respectively.

### INSTRUCTIONS CONCERNING AMENDMENTS UNDER ARTICLE 19

The applicant has, after having received the international search report, one opportunity to amend the claims of the international application. It should however be emphasized that, since all parts of the international application (claims, description and drawings) may be amended during the international preliminary examination procedure, there is usually no need to file amendments of the claims under Article 19 except where, e.g. the applicant wants the latter to be published for the purposes of provisional protection or has another reason for amending the claims before international publication. Furthermore, it should be emphasized that provisional protection is available in some States only.

#### What parts of the International application may be amended?

Under Article 19, only the claims may be amended.

During the international phase, the claims may also be amended (or further amended) under Article 34 before the International Preliminary Examining Authority. The description and drawings may only be amended under Article 34 before the International Examining Authority.

Upon entry into the national phase, all parts of the international application may be amended under Article 28 or, where applicable, Article 41.

#### When?

Within 2 months from the date of transmittal of the international search report or 16 months from the priority date, whichever time limit expires later. It should be noted, however, that the amendments will be considered as having been received on time if they are received by the International Bureau after the expiration of the applicable time limit but before the completion of the technical preparations for international publication (Rule 46.1).

#### Where not to file the amendments?

The amendments may only be filed with the International Bureau and not with the receiving Office or the International Searching Authority (Rule 46.2).

Where a demand for international preliminary examination has been/is filed, see below.

#### How?

Either by cancelling one or more entire claims, by adding one or more new claims or by amending the text of one or more of the claims as filed.

A replacement sheet must be submitted for each sheet of the claims which, on account of an amendment or amendments, differs from the sheet originally filed.

All the claims appearing on a replacement sheet must be numbered in Arabic numerals. Where a claim is cancelled, no renumbering of the other claims is required. In all cases where claims are renumbered, they must be renumbered consecutively (Administrative Instructions, Section 205(b)).

The amendments must be made in the language in which the international application is to be published.

#### What documents must/may accompany the amendments?

##### Letter (Section 205(b)):

The amendments must be submitted with a letter.

The letter will not be published with the international application and the amended claims. It should not be confused with the "Statement under Article 19(1)" (see below, under "Statement under Article 19(1)").

The letter must be in English or French, at the choice of the applicant. However, if the language of the international application is English, the letter must be in English; if the language of the international application is French, the letter must be in French.

## NOTES TO FORM PCT/ISA/220 (continued)

The letter must indicate the differences between the claims as filed and the claims as amended. It must, in particular, indicate, in connection with each claim appearing in the international application (it being understood that identical indications concerning several claims may be grouped), whether

- (i) the claim is unchanged;
- (ii) the claim is cancelled;
- (iii) the claim is new;
- (iv) the claim replaces one or more claims as filed;
- (v) the claim is the result of the division of a claim as filed.

The following examples illustrate the manner in which amendments must be explained in the accompanying letter:

1. [Where originally there were 48 claims and after amendment of some claims there are 51]:  
"Claims 1 to 29, 31, 32, 34, 35, 37 to 48 replaced by amended claims bearing the same numbers; claims 30, 33 and 36 unchanged; new claims 49 to 51 added."
2. [Where originally there were 15 claims and after amendment of all claims there are 11]:  
"Claims 1 to 15 replaced by amended claims 1 to 11."
3. [Where originally there were 14 claims and the amendments consist in cancelling some claims and in adding new claims]:  
"Claims 1 to 6 and 14 unchanged; claims 7 to 13 cancelled; new claims 15, 16 and 17 added." or  
"Claims 7 to 13 cancelled; new claims 15, 16 and 17 added; all other claims unchanged."
4. [Where various kinds of amendments are made]:  
"Claims 1-10 unchanged; claims 11 to 13, 18 and 19 cancelled; claims 14, 15 and 16 replaced by amended claim 14; claim 17 subdivided into amended claims 15, 16 and 17; new claims 20 and 21 added."

### "Statement under article 19(1)" (Rule 46.4)

The amendments may be accompanied by a statement explaining the amendments and indicating any impact that such amendments might have on the description and the drawings (which cannot be amended under Article 19(1)).

The statement will be published with the international application and the amended claims.

It must be in the language in which the international application is to be published.

It must be brief, not exceeding 500 words if in English or if translated into English.

It should not be confused with and does not replace the letter indicating the differences between the claims as filed and as amended. It must be filed on a separate sheet and must be identified as such by a heading, preferably by using the words "Statement under Article 19(1)."

It may not contain any disparaging comments on the international search report or the relevance of citations contained in that report. Reference to citations, relevant to a given claim, contained in the international search report may be made only in connection with an amendment of that claim.

### Consequence if a demand for international preliminary examination has already been filed

If, at the time of filing any amendments under Article 19, a demand for international preliminary examination has already been submitted, the applicant must preferably, at the same time of filing the amendments with the International Bureau, also file a copy of such amendments with the International Preliminary Examining Authority (see Rule 62.2(a), first sentence).

### Consequence with regard to translation of the international application for entry into the national phase

The applicant's attention is drawn to the fact that, where upon entry into the national phase, a translation of the claims as amended under Article 19 may have to be furnished to the designated/elected Offices, instead of, or in addition to, the translation of the claims as filed.

For further details on the requirements of each designated/elected Office, see Volume II of the PCT Applicant's Guide.

REC'D 12 NOV 2001

WIPO

PCT

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)



Applicant's or agent's file reference 4239-55360	<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/US00/24308	International filing date (day/month/year) 31/08/2000	Priority date (day/month/year) 09/09/1999
International Patent Classification (IPC) or national classification and IPC H05G2/00		
Applicant THE GOVERNMENT OF THE UNITED STATES OF AMERICA,...		

- This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
- This REPORT consists of a total of 7 sheets, including this cover sheet.  
  
☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of sheets.

- This report contains indications relating to the following items:

- |      |                                     |   |
|------|-------------------------------------|---|
| I    | <input checked="" type="checkbox"/> | Basis of the report   |
| II   | <input type="checkbox"/>            | Priority  |
| III  | <input type="checkbox"/>            | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability  |
| IV   | <input type="checkbox"/>            | Lack of unity of invention  |
| V    | <input checked="" type="checkbox"/> | Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement |
| VI   | <input type="checkbox"/>            | Certain documents cited   |
| VII  | <input checked="" type="checkbox"/> | Certain defects in the international application  |
| VIII | <input checked="" type="checkbox"/> | Certain observations on the international application   |

Date of submission of the demand  14/03/2001	Date of completion of this report  08.11.2001
Name and mailing address of the international preliminary examining authority:   European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer  Bésuelle, E  Telephone No. +49 89 2399 7972  

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/US00/24308

**I. Basis of the report**

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

**Description, pages:**

1-15 as originally filed

**Claims, No.:**

1-26 as received on 29/11/2000 with letter of 13/10/2000

**Drawings, sheets:**

1/4-4/4 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).  
☐ the language of publication of the international application (under Rule 48.3(b)).  
☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.  
☐ filed together with the international application in computer readable form.  
☐ furnished subsequently to this Authority in written form.  
☐ furnished subsequently to this Authority in computer readable form.  
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.  
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:  
☐ the claims, Nos.:

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/US00/24308

☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

*(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*

6. Additional observations, if necessary:

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

**1. Statement**

Novelty (N)	Yes:	Claims	1-17, 20-21, 24-26
	No:	Claims	18,19,22,23
Inventive step (IS)	Yes:	Claims	
	No:	Claims	1-17,20,21,24-26
Industrial applicability (IA)	Yes:	Claims	1-26
	No:	Claims	

2. Citations and explanations  
**see separate sheet**

**VII. Certain defects in the international application**

The following defects in the form or contents of the international application have been noted:  
**see separate sheet**

**VIII. Certain observations on the international application**

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:  
**see separate sheet**

1) Reference is made to the following documents:

D1: DATABASE WPI Section EI, Week 199418 Derwent Publications Ltd.,  
London, GB; Class W06, AN 1994-150804 &

US-A-8 083 580 (US DEP. OF NAVY) 1<sup>st</sup> January 1994.

D2: GORDON C. L. et al.: 'TIME-GATED IMAGING WITH AN  
ULTRASHORT- PULSE, LASER-PRODUCED-PLASMA X-RAY SOURCE',  
OPTICS LETTERS, OPTICAL SOCIETY OF AMERICA, WASHINGTON,  
vol. 20, no. 9, 1<sup>st</sup> May 1995, pages 1056-1058, ISSN: 0146-9592 cited in  
the application &

US-A-8 083 580 (US DEP. OF NAVY) 1<sup>st</sup> January 1994.

D3: US-A-5 275 168 (REINTJES John F. et al.) 4 January 1994 (1994-01-  
04).

**Re Item V**

Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step  
or industrial applicability; citations and explanations supporting such statement

2) Claims 18 and 1:

2.1) The subject-matter of claim 18 is not new. Indeed, document D1  
discloses:

An imaging apparatus, comprising

- an electromagnetic pulse source ("laser");
- a beam splitter splitting a pulse from the electromagnetic pulse  
source into a first pulse portion and a second pulse portion;
- the first pulse portion directed towards an object (46) for generating  
an object image; and
- a microchannel plate detector ("MCP") - assumed to be a particular  
kind of time gate, cf. p. 7 ll. 21-22 - capturing the object image in response to the  
second pulse portion.

2.2) The fact of using an X-ray beam for imaging, as defined in claim 1, is obvious for the person skilled in the art of imaging. Therefore, claim 1 lacks an inventive step.

3) Claims 2-9, and 19-22:

3.1) The features defined in claims 2, 6, 7, 9, 19 and 22 are disclosed in document D1.

Therefore, the subject-matter of claims 19 and 22 are not new; the subject-matter of claims 2, 6, 7, and 9 do not involve any inventive step, since the features defined in said claims 2, 6, 7, and 9 solve the same problems.

3.2) The features defined in claims 3-5 are minor well-known technical features that are not involving an inventive step. In particular, the features of claim 4 are disclosed in document D2.

3.3) The features defined in claim 8 are disclosed in document D3, e.g. cf. Fig. 1 and the related parts of the description: a Raman generator (23) generating an imaging beam (29), a beam combiner (39), a Raman amplifier (21) receiving the combined beam. These features are used for the same purpose as for the present application, i.e. for imaging an object via electromagnetic waves. Therefore, it is obvious for the person skilled in the art to use the same structural features to solve the same problem, without any inventiveness.

3.4) For the same reason, claims 20 and 21 whose features are disclosed in document D3, do not involve any inventive step.

4) The subject-matter of claim 23 is not new for the following reason.

Document D1 discloses:

a method for producing an image from an object (46), comprising



- generating an electromagnetic pulse (from the "laser");
- splitting the pulse into a first and a second portion;
- generating an imaging beam in response to the first pulse portion, the beam directed toward an object (46) for generating an object image; and
- capturing the object image on a microchannel plate detector ("MCP") in response to the second pulse portion.

5) The fact of using an X-ray beam as imaging beam, as defined in claim 10 is obvious for the person skilled in the art of imaging, e.g. cf. document D2. Therefore, claim 10 does not involve an inventive step.

6) Claims 11-17 and 24-26:

6.1) The feature defined in claim 12 is well-known, e.g. cf. document D1.

6.2) The features defined in claims 15-17 are steps of method well known from the person skilled in the art of medical imaging apparatus, not presenting any inventiveness, and not contributing to solve the posed problem.

6.3) The fact of using an X-ray source to produce an imaging beam as defined in claims 11 and 24 is obvious for the person skilled in the art of imaging, e.g. cf. document D2.

6.4) The features defined in claim 25 are obvious. Claims 13 and 26 define a minor feature that is not contributing to solved the problem.

### **Re Item VII**

Certain defects in the international application

7) The following deficiencies concerning units and reference signs are pointed out.

7.1) The unit is missing p. 2, line 13. This unit is assumed to be W/cm<sup>2</sup> during the drawing up of the present IPER.

7.2) Some units mentioned in the application are unknown: e.g. p. 2 l. 18, p. 8 l. 3. They are assumed to be  $\mu\text{m}$  during the drawing up of the present IPER.

7.3) Reference signs should appear in the claims in brackets.

**Re Item VIII**

Certain observations on the international application

8) The subject-matter of claim 14 is not clearly understandable. Indeed, if as it is understood, the X-ray pulse - having a wide wavelength spectrum with atomic transition rays - is the input of the Raman generator, it is requested to the Applicant to provide document(s) proving that such a Raman generator exists.

9) Claim 3 falsely refers to itself. The examination has been done assuming that claim 3 refers to claim 2.

10) The wording "spirit of the ... claims" renders the scope of the claims unclear and therefore should be deleted.

From the  
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:

NOONAN, William, D  
KLARQUIST, SPARKMAN, CAMPBELL,  
LEIGH & WHINSTON, LLP  
One World Trade Center, Suite 1600  
121 S.W. Salmon Street  
Portland, Oregon 97204  
ETATS-UNIS D'AMERIQUE

PCT

NOTIFICATION OF TRANSMITTAL OF  
THE INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT  
(PCT Rule 71.1)

Date of mailing  
(day/month/year) 08.11.2001

Applicant's or agent's file reference  
4239-55360

IMPORTANT NOTIFICATION

International application No.  
PCT/US00/24308

International filing date (day/month/year)  
31/08/2000

Priority date (day/month/year)  
09/09/1999

Applicant  
THE GOVERNMENT OF THE UNITED STATES OF AMERICA,...

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.

4. REMINDER

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

Name and mailing address of the IPEA/



European Patent Office  
D-80298 Munich  
Tel. +49 89 2399 - 0 Tx: 523656 epmu d  
Fax: +49 89 2399 - 4465

Authorized officer

Baumann, H

Tel. +49 89 2399-2131



# PATENT COOPERATION TREATY

## PCT

### INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 4239-55360	<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/US00/24308	International filing date (day/month/year) 31/08/2000	Priority date (day/month/year) 09/09/1999
International Patent Classification (IPC) or national classification and IPC H05G2/00		
Applicant THE GOVERNMENT OF THE UNITED STATES OF AMERICA,...		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.


2. This REPORT consists of a total of 7 sheets, including this cover sheet.

☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☒ Certain defects in the international application
- VIII ☒ Certain observations on the international application

Date of submission of the demand  14/03/2001	Date of completion of this report  08.11.2001
Name and mailing address of the international preliminary examining authority:   European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer  Bésuelle, E  Telephone No. +49 89 2399 7972



**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/US00/24308

**I. Basis of the report**

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

**Description, pages:**

1-15 as originally filed

**Claims, No.:**

1-26 as received on 29/11/2000 with letter of 13/10/2000

**Drawings, sheets:**

1/4-4/4 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/US00/24308

☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

*(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*

6. Additional observations, if necessary:

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

**1. Statement**

Novelty (N)	Yes:	Claims	1-17, 20-21, 24-26
	No:	Claims	18,19,22,23
Inventive step (IS)	Yes:	Claims	
	No:	Claims	1-17,20,21,24-26
Industrial applicability (IA)	Yes:	Claims	1-26
	No:	Claims	

2. Citations and explanations  
**see separate sheet**

**VII. Certain defects in the international application**

The following defects in the form or contents of the international application have been noted:  
**see separate sheet**

**VIII. Certain observations on the international application**

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:  
**see separate sheet**

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

---

International application No. PCT/US00/24308

1) Reference is made to the following documents:

D1: DATABASE WPI Section EI, Week 199418 Derwent Publications Ltd.,  
London, GB; Class W06, AN 1994-150804 &

US-A-8 083 580 (US DEP. OF NAVY) 1<sup>st</sup> January 1994.

D2: GORDON C. L. et al.: 'TIME-GATED IMAGING WITH AN  
ULTRASHORT- PULSE, LASER-PRODUCED-PLASMA X-RAY SOURCE',  
OPTICS LETTERS, OPTICAL SOCIETY OF AMERICA, WASHINGTON,  
vol. 20, no. 9, 1<sup>st</sup> May 1995, pages 1056-1058, ISSN: 0146-9592 cited in  
the application &

US-A-8 083 580 (US DEP. OF NAVY) 1<sup>st</sup> January 1994.

D3: US-A-5 275 168 (REINTJES John F. et al.) 4 January 1994 (1994-01-  
04).

**Re Item V**

Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step  
or industrial applicability; citations and explanations supporting such statement

2) Claims 18 and 1:

2.1) The subject-matter of claim 18 is not new. Indeed, document D1  
discloses:

An imaging apparatus, comprising

- an electromagnetic pulse source ("laser");
- a beam splitter splitting a pulse from the electromagnetic pulse  
source into a first pulse portion and a second pulse portion;
- the first pulse portion directed towards an object (46) for generating  
an object image; and
- a microchannel plate detector ("MCP") - assumed to be a particular  
kind of time gate, cf. p. 7 ll. 21-22 - capturing the object image in response to the  
second pulse portion.

2.2) The fact of using an X-ray beam for imaging, as defined in claim 1, is obvious for the person skilled in the art of imaging. Therefore, claim 1 lacks an inventive step.

3) Claims 2-9, and 19-22:

3.1) The features defined in claims 2, 6, 7, 9, 19 and 22 are disclosed in document D1.

Therefore, the subject-matter of claims 19 and 22 are not new; the subject-matter of claims 2, 6, 7, and 9 do not involve any inventive step, since the features defined in said claims 2, 6, 7, and 9 solve the same problems.

3.2) The features defined in claims 3-5 are minor well-known technical features that are not involving an inventive step. In particular, the features of claim 4 are disclosed in document D2.

3.3) The features defined in claim 8 are disclosed in document D3, e.g. cf. Fig. 1 and the related parts of the description: a Raman generator (23) generating an imaging beam (29), a beam combiner (39), a Raman amplifier (21) receiving the combined beam. These features are used for the same purpose as for the present application, i.e. for imaging an object via electromagnetic waves. Therefore, it is obvious for the person skilled in the art to use the same structural features to solve the same problem, without any inventiveness.

3.4) For the same reason, claims 20 and 21 whose features are disclosed in document D3, do not involve any inventive step.

4) The subject-matter of claim 23 is not new for the following reason.

Document D1 discloses:

a method for producing an image from an object (46), comprising



**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

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International application No. PCT/US00/24308

- generating an electromagnetic pulse (from the "laser");
- splitting the pulse into a first and a second portion;
- generating an imaging beam in response to the first pulse portion, the beam directed toward an object (46) for generating an object image; and
- capturing the object image on a microchannel plate detector ("MCP") in response to the second pulse portion.

5) The fact of using an X-ray beam as imaging beam, as defined in claim 10 is obvious for the person skilled in the art of imaging, e.g. cf. document D2. Therefore, claim 10 does not involve an inventive step.

6) Claims 11-17 and 24-26:

6.1) The feature defined in claim 12 is well-known, e.g. cf. document D1.

6.2) The features defined in claims 15-17 are steps of method well known from the person skilled in the art of medical imaging apparatus, not presenting any inventiveness, and not contributing to solve the posed problem.

6.3) The fact of using an X-ray source to produce an imaging beam as defined in claims 11 and 24 is obvious for the person skilled in the art of imaging, e.g. cf. document D2.

6.4) The features defined in claim 25 are obvious. Claims 13 and 26 define a minor feature that is not contributing to solved the problem.

**Re Item VII**

Certain defects in the international application

7) The following deficiencies concerning units and reference signs are pointed out.

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

---

International application No. PCT/US00/24308

7.1) The unit is missing p. 2, line 13. This unit is assumed to be  $W/cm^2$  during the drawing up of the present IPER.

7.2) Some units mentioned in the application are unknown: e.g. p. 2 l. 18, p. 8 l. 3. They are assumed to be  $\mu m$  during the drawing up of the present IPER.

7.3) Reference signs should appear in the claims in brackets.

**Re Item VIII**

Certain observations on the international application

8) The subject-matter of claim 14 is not clearly understandable. Indeed, if as it is understood, the X-ray pulse - having a wide wavelength spectrum with atomic transition rays - is the input of the Raman generator, it is requested to the Applicant to provide document(s) proving that such a Raman generator exists.

9) Claim 3 falsely refers to itself. The examination has been done assuming that claim 3 refers to claim 2.

10) The wording "spirit of the ... claims" renders the scope of the claims unclear and therefore should be deleted.

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
15 March 2001 (15.03.2001)

PCT

(10) International Publication Number  
**WO 01/19143 A1**

(51) International Patent Classification<sup>7</sup>: H05G 2/00

(21) International Application Number: PCT/US00/24308

(22) International Filing Date: 31 August 2000 (31.08.2000)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
60/153,100 9 September 1999 (09.09.1999) US

(71) Applicant (for all designated States except US): THE GOVERNMENT OF THE UNITED STATES OF AMERICA, as represented by THE SECRETARY, DEPARTMENT OF HEALTH & HUMAN SERVICES, THE NATIONAL INSTITUTES OF HEALTH [US/US]; Office of Technology Transfer, 6011 Executive Boulevard, Suite #325, Rockville, MD 20852 (US).

(72) Inventor; and

(75) Inventor/Applicant (for US only): WAYNANT, Ronald, W. [US/US]; 13101 Claxton Drive, Laurel, MD 20708 (US).

(74) Agent: BECKER, Mark, L.; Klarquist, Sparkman, Campbell, Leigh & Whinston, LLP, One World Trade Center, Suite 1600, 121 SW Salmon Street, Portland, OR 97204 (US).

(81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.

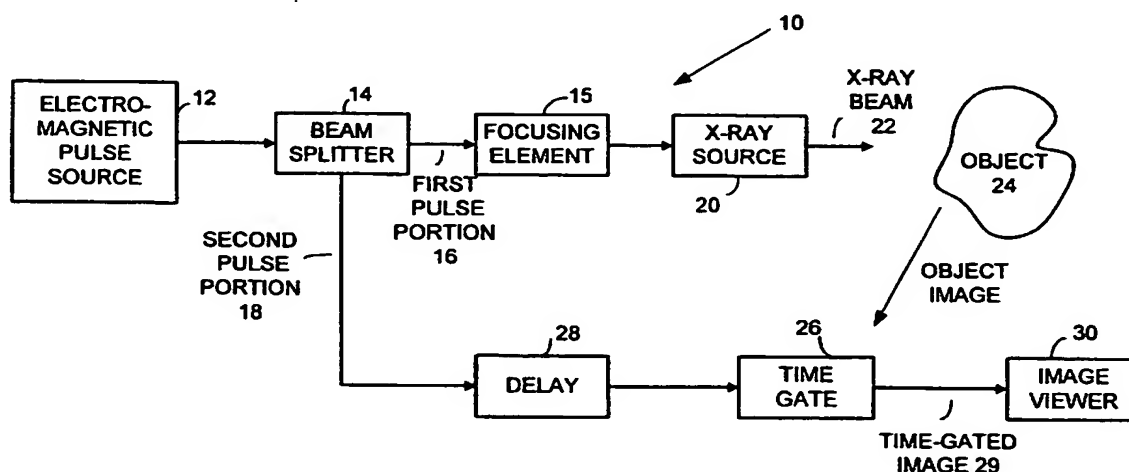
(84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

Published:

— With international search report.

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: TIME-GATED IMAGING WITH A SPLIT-BEAM SOURCE



(57) Abstract: An imaging apparatus includes an electromagnetic pulse source, a beam splitter, an X-ray source, and a time gate. The electromagnetic pulse source generates pulses. The beam splitter splits a pulse into a first portion and a second portion. The X-ray source generates a beam in response to the first pulse portion, the beam directed toward an object for generating an object image. The time gate captures an object image in response to the second pulse portion. A related method apart from the apparatus performs the above steps.

WO 01/19143 A1

## PCT

## INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference <b>4239-55360</b>	<b>FOR FURTHER ACTION</b> see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. <b>PCT/US 00/ 24308</b>	International filing date (day/month/year) <b>31/08/2000</b>	(Earliest) Priority Date (day/month/year) <b>09/09/1999</b>
Applicant <b>THE GOVERNMENT OF THE UNITED STATES OF AMERICA,...</b>		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 3 sheets.



It is also accompanied by a copy of each prior art document cited in this report.

## 1. Basis of the report

- a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.



the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :



contained in the international application in written form.



filed together with the international application in computer readable form.



furnished subsequently to this Authority in written form.



furnished subsequently to this Authority in computer readable form.



the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.



the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ **Certain claims were found unsearchable** (See Box I).

3. ☐ **Unity of invention is lacking** (see Box II).

4. With regard to the **title**,

the text is approved as submitted by the applicant.



the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

the text is approved as submitted by the applicant.



the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No.

as suggested by the applicant.



because the applicant failed to suggest a figure.



because this figure better characterizes the invention.

1



None of the figures.

# INTERNATIONAL SEARCH REPORT

National Application No  
PCT/US 00/24308

**A. CLASSIFICATION OF SUBJECT MATTER**  
IPC 7 H05G2/00

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)  
IPC 7 H05G A61B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

WPI Data, PAJ, EPO-Internal, INSPEC

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>DATABASE WPI Section EI, Week 199418 Derwent Publications Ltd., London, GB; Class W06, AN 1994-150804 XP002154943 abstract</p>	20,21
A	<p>&amp; US 8 083 580 A (US DEP. OF NAVY) 1194</p>	1,2,6, 11,13
Y	<p>--- US 5 275 168 A (REINTJES JOHN F ET AL) 4 January 1994 (1994-01-04)  column 4, line 35 - line 51 column 7, line 10 - line 66 figure 1  --- -/--</p>	1,2,4,6, 7,9-15, 17,20,21

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

\* Special categories of cited documents:

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the international filing date
- \*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the international filing date but later than the priority date claimed

- \*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- \*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- \*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- \*G\* document member of the same patent family

Date of the actual completion of the international search

8 December 2000

Date of mailing of the international search report

19/12/2000

Name and mailing address of the ISA

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NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
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Authorized officer

Capostagno, E

## INTERNATIONAL SEARCH REPORT

International Application No  
PCT/US 00/24308

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	GORDON C L ET AL: "TIME-GATED IMAGING WITH AN ULTRASHORT-PULSE, LASER-PRODUCED-PLASMA X-RAY SOURCE" OPTICS LETTERS,US,OPTICAL SOCIETY OF AMERICA, WASHINGTON, vol. 20, no. 9, 1 May 1995 (1995-05-01), pages 1056-1058, XP000503711 ISSN: 0146-9592 cited in the application	1,2,4,6, 7,9-15, 17,20,21
A	page 1056, left-hand column, paragraph 1 -right-hand column, paragraph 1 page 1057, right-hand column, paragraph 1 page 1057, left-hand column, paragraph 1 & US 8 083 580 A (US DEP. OF NAVY) 1 January 1994 (1994-01-01) ---	3,5,18
A	EP 0 446 028 A (YOO KWONG M ;ALFANO ROBERT R (US)) 11 September 1991 (1991-09-11) ---	
A	US 5 418 797 A (BASHKANSKY MARK ET AL) 23 May 1995 (1995-05-23) -----	

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 00/24308

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
US 5275168	A	04-01-1994	NONE		
<hr/>					
EP 0446028	A	11-09-1991	US	5140463 A	18-08-1992
			JP	2520197 B	31-07-1996
			JP	5056982 A	09-03-1993
<hr/>					
US 5418797	A	23-05-1995	AU	678812 B	12-06-1997
			AU	6021094 A	15-08-1994
			CA	2153880 A	04-08-1994
			EP	0680276 A	08-11-1995
			JP	8509544 T	08-10-1996
			WO	9416621 A	04-08-1994
<hr/>					